TOWN OF BROOKFIELD
Public Works Department

PAVEMENT MANAGEMENT PLAN

Maintaining the public roads and drainage system is a major concern of any town government. Roads are a vital resource. They provide a basic and essential service to citizens and the commercial community. It is a misconception that postponing or neglecting maintenance is a way to save money. Deteriorated roads can not simply be closed or discarded. They must be repaired or completely reconstructed if they are unrepairable. The reconstruction cost can be substantial and it may prove very inconvenient to commuters.

There are hidden costs directly related to deteriorated roads such as: excessive fuel use, excessive vehicle maintenance and excessive tire wear. Studies indicate that, the cost of fuel alone saved by keeping a road in good condition offsets the total cost of maintenance. Rather than waiting until after the roadway deteriorates beyond the point where resurfacing ceases to be a viable and cost effective option. It would be far less expensive to do the work at the 75% life cycle point.

The total improved (Bituminous Concrete surface) Brookfield road mileage was approximately 96.50 miles at the end of 2003. The Department of Public Works took the task in hand to do a systematic and consistent evaluation of pavement conditions to generate a priority listing and determine proper maintenance practices.

In developing a Pavement Management Program, it is important to understand the components of such a system so that all maintenance decisions are based on sound engineered judgment. The plan development is composed of a system inventory and field condition rating.

The pavement condition rating form has a 0 to 5 rating system.

Six components that effect or determine pavement service-ability are rated. Those components are:

1. Surface Condition: Degree of cracking is the indicator for this component.

2. Sub-Base Condition: Obvious breakdown of failure of foundation structure of improper sub-base material.

3. Drainage: Removal and containment of sub-surface and surface water from pavement area, (poor maintenance of drainage structure does not indicate a poor rating).

4. Deterioration: The deformation of pavement cross-section from its original section.

5. Distortion: The deformation of pavement cross-section from its original section.

6. Riding Quality: The roughness and smoothness of ride at normal speed as noted in an average passenger vehicle.

Each component is weighed according to its effect on overall pavement condition and then rated on a 0 to 5 scale. The sum of the weighted average determines the final rating.

PAVEMENT RATING DESCRIPTION

Scale	Description	Definition/Maintenance
4-5	Very Good	Good roads
3-4	Good	Various minor maintenance to upgrade and prolong life span
2-3	Fair	A moderate amount of routine pavement maintenance to extend life span
1-2	Poor	Extensive maintenance work (overlay or surface treatment) to prolong life span
0-1	Very Poor	Partial or complete reconstruction is necessary to provide adequate serviceability and prolong life

The average life expectancy of the asphalt pavement road is 15 years. The road shall have at least 1-1/2" course of the asphalt overlay at 75% of the life cycle point (15 years x 75% = 11.25 years, or any time after 10 years as of the new construction).

ALTERNATIVE I

To bring the Brookfield Town roadway system under proper service level, a 7-year chip-sealing plan using 3/8" stone in combination with CRS-2 should be used on all low density and cul de sac roads.

All main roads with high-density traffic should be overlayed with 1-1/2" Bituminous Concrete Class I every 10 years.

All minor and major drainage installation should occur before the pre-leveling and repaving of any road.

Roads with P.S.R. rating between 0 and .99 need partial or complete drainage installation and reconstruction. Portions of roads with P.S.R.'s greater than .99 contain segments of roads which may also need reconstruction but the total length of road is within a poor to fair P.S.R. rating. The above roads should be chip-sealed every 7 years while awaiting drainage installation and reconstruction.

ALTERNATE II

To bring the Town roadway system under proper service level, a 10-year Pavement Plan using a 1-1/2" Bituminous Concrete Overlay, Class I for all roads should be utilized. All minor and major drainage installation will occur before pre-leveling and repaving of any road.

Roads with P.S.R. rating between 0 and .99 need partial or complete drainage installation and reconstruction. Portions of roads with P.S.R.'s greater than .99 contain segments of roads which may also need reconstruction but the total length of road is within a poor to fair P.S.R. rating. The above roads should be chip-sealed every 7 years while awaiting drainage installation and reconstruction.

ALTERNATE III

All improved Town roads with P.S.R. rating of 2.0 and above should have the long/trans crack sealed to prolong the life of the pavement. The water seeps into the cracks of the pavement. The water infiltrates into the subbase, and due to the weather conditions, expansion and contraction of freezing and thawing occurs within the subbase and pavement damage develops.

All roads scheduled for reconstruction must be surveyed and designed. An average of 0.5 miles of road should be reconstructed every two years. The survey and design should be completed from November to March, drainage installation from April to October, and the following year, reconstruction of the road from March to October.

The Pavement Management Plan will be updated every two years by the Public Works Department to determine new P.S.R.'s for all roads, and prioritize roads for drainage installation and reconstruction.

The mileage for all roads maintained by the Town of Brookfield were taken from the D.O.T. certified local road mileages which are eligible for inclusion in the Town Aid Program.

The average widths of all roads were field measured. The existing catch basin count of 2,000 is only approximate and does not reflect cross-culverts, discharges, and catch basins covered with debris.

Alternate II is the proper plan for all roads. Due to economic restrains, Alternate I could be considered for the improvement of all roads.

Chip sealing follows the contour of the roads and provides a wearing surface, which should be replaced every 7 years. The pre-leveling and repaving of all roads or sections of roads that do not need reconstruction will improve the contours and cross-slopes of all roads while providing a smoother wearing surface. The roads should be repaved every 10 years.